Date of issue: 2021/05/19
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Safety Data Sheet

Section 1. Identification of the substance/mixture and of the company/undertaking

Product identifier:
Product name: 1,1,2,2-Tetrachloroethylene
SDS No. : 7662E-3
Relevant identified uses of the substance or mixture and uses advised against
Research and Development
Details of the supplier of the safety data sheet
Manufacturer/Supplier: KISHIDA CHEMICAL CO., LTD.
Address: 3-1, Honmachibashi, Chuo-ku, Osaka, JAPAN
Division: Chemical Safety Management Department
Telephone number: +81-6-6946-8061
FAX: +81-6-6946-1607

Section 2. Hazards identification

GHS classification and label elements of the product
Classification of the substance or mixture
HEALTH HAZARDS
Acute toxicity (Inhalation): Category 4
Skin corrosion/irritation: Category 2
Serious eye damage/eye irritation: Category 2
Carcinogenicity: Category 1B
Reproductive toxicity: Category 2
Reproductive toxicity - effects on or via lactation: Additional category
Specific target organ toxicity - single exposure: Category 1 (liver, central nervous system, respiratory system)
Specific target organ toxicity - single exposure: Category 3 (Narcotic effects)
Specific target organ toxicity - repeated exposure: Category 1 (liver, nervous system, respiratory system)
Specific target organ toxicity - repeated exposure: Category 2 (kidneys)
ENVIRONMENT HAZARDS
Hazardous to the aquatic environment, short-term (acute): Category 1
Hazardous to the aquatic environment, long-term (chronic): Category 1
(Note) GHS classification without description: Not classified/Classification not possible
Label elements

Signal word: Danger
HAZARD STATEMENT
H332 Harmful if inhaled
H315 Causes skin irritation
H319 Causes serious eye irritation
H350 May cause cancer
H361 Suspected of damaging fertility or the unborn child

H362 May cause harm to breast-fed children
H370 Causes damage to organs (liver, central nervous system, respiratory system)
H336 May cause drowsiness or dizziness
H372 Causes damage to organs through prolonged or repeated exposure (liver, nervous system, respiratory system)
H373 May cause damage to organs through prolonged or repeated exposure (kidneys)
H410 Very toxic to aquatic life with long lasting effects

PRECAUTIONARY STATEMENT

Prevention

P202 Do not handle until all safety precautions have been read and understood.
P263 Avoid contact during pregnancy and while nursing.
P273 Avoid release to the environment.
P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P271 Use only outdoors or in a well-ventilated area.
P264 Wash contaminated parts thoroughly after handling.
P280 Wear protective gloves.
P280 Wear eye protection/face protection.
P280 Use personal protective equipment as required.
P270 Do not eat, drink or smoke when using this product.

Response

P391 Collect spillage.
P314 Get medical advice/attention if you feel unwell.
P308 + P313 IF exposed or concerned: Get medical advice/attention.
P312 Call a POISON CENTER/doctor/physician if you feel unwell.
P308 + P311 IF exposed or concerned: Call a POISON CENTER/doctor/physician.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P332 + P313 If skin irritation occurs: Get medical advice/attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/attention.

Storage

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Disposal

P501 Dispose of contents/container in accordance with local/national regulation.

Specific adverse human health effects

See "11. Toxicological Information".

Section 3. Composition/information on ingredients

Mixture/Substance selection:

Substance

Ingredient name	Content (%)	CAS No.	ENCS	Chemical formula
1,1,2,2-Tetrachloroethylene	98(min)	127-18-4	2-114	C2Cl4

Note : The figures shown above are not the specifications of the product.

Impurities

1,2-Butylene oxide 0.10% (CAS No. 106-88-7)

Section 4. First-aid measures

Descriptions of first-aid measures

General measures

Get medical advice/attention if you feel unwell.

IF INHALED

Remove person to fresh air and keep comfortable for breathing.

Call a POISON CENTER/doctor/physician if you feel unwell.

IF ON SKIN

Take off immediately all contaminated clothing. Rinse skin with water or shower.

Wash with plenty of soap and water.

If skin irritation or rash occurs: Get medical advice/attention.

IF IN EYES

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.

IF SWALLOWED

Rinse mouth.

Call a POISON CENTER/doctor/physician if you feel unwell.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Use appropriate extinguishing media suitable for surrounding facilities.

Unsuitable extinguishing media

Unsuitable extinguishing media data is not available.

Specific hazards arising from the substance or mixture

Fire may produce irritating, corrosive and/or toxic gases.

Runoff from fire control or dilution water may cause pollution.

See "10.Stability and Reactivity".

Advice for firefighters

Specific fire-fighting measures

Evacuate non-essential personnel to safe area.

Special protective equipment and precautions for fire-fighters

Wear fire resistant or flame retardant clothing.

Wear protective gloves/protective clothing/eye protection/face protection.

Firefighters should wear self-contained breathing apparatus with a full facepiece operated in the positive pressure mode.

Section 6. Accidental release measures

Personnel precautions, protective equipment and emergency procedures

Keep unauthorized personnel away.

Ventilate area until material pick up is complete.

Wear proper protective equipment.

Environmental precautions

Prevent spills from entering sewers, watercourses, low areas or rivers. To be careful not

discharged to the environment without being properly handled waste water contaminated.

Methods and materials for containment and cleaning up

Absorb spill with inert material (dry sand, earth, et al), then place in a chemical waste container.

Preventive measures for secondary accident

Collect spillage.

Section 7. Handling and storage

Precautions for safe handling

Preventive measures

(Exposure Control for handling personnel)

Do not breathe dust/fume/gas/mist/vapors/spray.

(Protective measures against fire and explosion)

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

(Exhaust/ventilator)

Exhaust/ventilator should be available.

(Safety treatments)

Avoid contact with skin.

Avoid contact with eyes.

Safety Measures

Do not handle until all safety precautions have been read and understood.

Use only outdoors or in a well-ventilated area.

Wear protective gloves/protective clothing/eye protection/face protection.

Wash hands et al thoroughly after handling.

When using do not eat, drink or smoke.

Any incompatibilities

See "10.Stability and Reactivity".

Advice on general occupational hygiene

Avoid contact during pregnancy and while nursing.

Wash contaminated parts thoroughly after handling.

Do not eat, drink or smoke when using this product.

Take off contaminated clothing and wash it before reuse.

Storage

Conditions for safe storage

Keep container tightly closed.

Store locked up. (P405)

Store in a cool, dry place. Do not store in direct sunlight.

Storage in accordance with local/national regulation.

Container and packaging materials for safe handling

Use closed unbreakable containers.

Section 8. Exposure controls/personal protection

Control parameters

Control value and Concentration standard value

(1,1,2,2-Tetrachloroethylene)

Japan control value 25ppm

Adopted value

(1,1,2,2-Tetrachloroethylene)
JSOH(1972) under study (skin)
(1,1,2,2-Tetrachloroethylene)
ACGIH(2001) TWA: 25ppm;
STEL: 100ppm (CNS impair)

Exposure controls

Appropriate engineering controls

Do not use in areas without adequate ventilation.
Eye wash station should be available.
Washing facilities should be available.

Individual protection measures

Recommend to use protective equipment in conformity with the standards.
Use appropriate protective equipment in accordance with local/national regulation.

Respiratory protection

Wear respiratory protection (dust-proof mask/gas mask). Select chemical cartridge corresponding to type of gases when using a gas mask.

Hand protection

Wear impervious protective glove.

Eye protection

Wear eye/face protection. Wear safety goggles in cases gas is generated.

Skin and body protection

Wear protective clothing.

Section 9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical state: Liquid
Color: Colourless, Clear
Odor: Characteristic odor
Melting point/Freezing point: -22℃
Boiling point or initial boiling point: (1,1,2,2-Tetrachloroethylene)121℃
Boiling range data is not available.
Flammability (gases, liquids and solids) data is not available.
Lower and upper explosion limit/flammability limit data is not available.
Flash point data is not available.
Auto-ignition temperature: (1,1,2,2-Tetrachloroethylene)> 650℃
Decomposition temperature data is not available.
pH data is not available.
Kinematic viscosity data is not available.
Solubility:

Solubility in water: 0.015 g/100 ml (20℃)
Solubility in solvent data is not available.

n-Octanol/water partition coefficient: log Pow3.4
Vapor pressure: 1.9 kPa (20℃)
Density and/or relative density: 1.62g/cm3 (20℃)
Relative vapor density (Air=1): 5.7
Relative density of the Vapor/air - mixture at 20℃ (Air = 1): 1.09
Particle characteristics data is not available.

Other information

Other information is not available.

Section 10. Stability and Reactivity

Reactivity

Not available.

Chemical stability

Stable under normal storage/handling conditions.

Possibility of hazardous reactions

The vapour is heavier than air and may accumulate in lowered spaces causing a deficiency of oxygen.
Decomposes on contact with hot surfaces or flames. This produces toxic and corrosive fumes of hydrogen chloride, phosgene and chlorine. Decomposes slowly on contact with moisture. This produces trichloroacetic acid and hydrochloric acid. Reacts violently with finely divided metals. This generates fire and explosion hazard. (ICSC 0076)

Conditions to avoid

Contact with incompatible materials.
Contact with fire source.

Incompatible materials

Water, Finely divided metals

Hazardous decomposition products

Carbon oxides, Hydrogen chloride, Hosgene, Chlorine, Trichloroacetic acid

Section 11. Toxicological Information

Information on toxicological effects

Acute toxicity

Acute toxicity (Oral)

[Data for components of the product]

[GHS Cat. Japan, base data]
(1,2-Butylene oxide)
rat LD50=500mg/kg (MHLW Risk Assessment Report, 2019)

Acute toxicity (Dermal)

[Data for components of the product]

[GHS Cat. Japan, base data]
(1,1,2,2-Tetrachloroethylene)
mouse LD50＝5000mg/kg (IUCLID, 2000)
(1,2-Butylene oxide)
rabbit LD50=1.77mL/kg (converted value by density 0.83g/cm3: 1469mg/kg) (AICIS IMAP, 2015)

Acute toxicity (Inhalation)

[Product]

Category 4, Harmful if inhaled

[Data for components of the product]

[GHS Cat. Japan, base data]
(1,1,2,2-Tetrachloroethylene)
vapor: rat LD50=5013ppm/4hr (EHC 31, 1984)
(1,2-Butylene oxide)
vapor: rat LC50 >6.3mg/L/4hr (cal.: 2136ppm/4hr) (AICIS IMAP, 2015)

Irritant properties

Skin corrosion/irritation

[Product]

Category 2, Causes skin irritation

[Data for components of the product]
[GHS Cat. Japan, base data]
(1,1,2,2-Tetrachloroethylene)
human/rabbit blistering et al (CICAD No.68, 2006)
(1,2-Butylene oxide)
corrosive under occlusive application, no irritation under semi-occlusive application (AICIS IMAP, 2015)

Serious eye damage/irritation
[Product]
Category 2, Causes serious eye irritation
[Data for components of the product]
[GHS Cat. Japan, base data]
(1,1,2,2-Tetrachloroethylene)
rabbit minimal irritation (CICAD No.68, 2006)
(1,2-Butylene oxide)
rabbit significant eye damage (AICIS IMAP, 2015)

Allergenic and sensitizing effects data is not available.

Mutagenic effects data is not available.

Carcinogenicity
[Product]
Category 1B, May cause cancer
[Data for components of the product]
[GHS Cat. Japan, base data]
(1,1,2,2-Tetrachloroethylene)
cat.1B; IARC Gr. 2A (IARC 63, 1995)
(1,2-Butylene oxide)
cat.2; IARC Gr.2B et al.
[IARC]
(1,1,2,2-Tetrachloroethylene)
Group 2A : Probably carcinogenic to humans
(1,2-Butylene oxide)
Group 2B : Possibly carcinogenic to humans
[ACGIH]
(1,1,2,2-Tetrachloroethylene)
A3(2001) : Confirmed Animal Carcinogen with Unknown Relevance to Humans
[NTP]
(1,1,2,2-Tetrachloroethylene)
RAHC : Reasonably Anticipated to be Human Carcinogens
[EU]
(1,1,2,2-Tetrachloroethylene)
Category 2; Substances suspected human carcinogens
(1,2-Butylene oxide)
Category 2; Substances suspected human carcinogens

Reproductive toxicity
[Product]
Category 2, Suspected of damaging fertility or the unborn child
Additional category, May cause harm to breast-fed children
[Data for components of the product]
[GHS Cat. Japan, base data]
(1,1,2,2-Tetrachloroethylene)

cat. 2; rat : CERI/NITE Hazard Assessment Report No.65, 2005
cat. add; IARC vol.63, 1995

Specific target organ toxicity (STOT)

STOT-single exposure

[Product]

Category 1, Causes damage to organs
Category 3, May cause drowsiness or dizziness

[Data for components of the product]

[cat.1]

[GHS Cat. Japan, base data]
(1,1,2,2-Tetrachloroethylene)
liver, central nervous system, respiratory system (IARC 63, 1995)

[cat.3 (respiratory tract irritation)]

[GHS Cat. Japan, base data]
(1,2-Butylene oxide)
respiratory tract irritation (MOE Result of the initial environmental risk assessment of chemicals, 2011)

[cat.3 (narcotic effects)]

[GHS Cat. Japan, base data]
(1,1,2,2-Tetrachloroethylene)
narcotic effect (EHC 31, 1984)
(1,2-Butylene oxide)
narcotic effect (MHLW Risk Assessment Report, 2019)

STOT-repeated exposure

[Product]

Category 1, Causes damage to organs through prolonged or repeated exposure
Category 2, May cause damage to organs through prolonged or repeated exposure

[Data for components of the product]

[cat.1]

[GHS Cat. Japan, base data]
(1,1,2,2-Tetrachloroethylene)
liver, nervous system, respiratory system (CERI/NITE Hazard Assessment Report, 2005)

[cat.2]

[GHS Cat. Japan, base data]
(1,1,2,2-Tetrachloroethylene)
kidneys (CERI/NITE Hazard Assessment Report, 2005)

Aspiration hazard data is not available.

Section 12. Ecological Information

Toxicity

Aquatic toxicity

[Product]

Category 1, Very toxic to aquatic life
Category 1, Very toxic to aquatic life with long lasting effects

[Data for components of the product]

Hazardous to the aquatic environment, short-term (acute)

[GHS Cat. Japan, base data]
(1,1,2,2-Tetrachloroethylene)
Crustacea (Daphnia magna) EC50=0.602mg/L/48hr (NITE Initial Risk Assessment Report, 2006)

(1,2-Butylene oxide)
Crustacea (Daphnia magna) EC50=69.8mg/L/48hr (MOE risk assessment vol.9, 2011; OECD SIDS, 2001)

Water solubility
(1,1,2,2-Tetrachloroethylene)
0.015 g/100 ml (20℃) (ICSC, 2013)
(1,2-Butylene oxide)
9.5 g/100 ml (25℃) (ICSC, 1997)

Persistence and degradability
[Data for components of the product]
(1,1,2,2-Tetrachloroethylene)
BOD_Degradation : 11% (METI existing chemical safety inspections)
(1,2-Butylene oxide)
Rapidly degradable (BOD_Degradation : 109% (CSCL DB, 19971))

Bioaccumulative potential
[Data for components of the product]
(1,1,2,2-Tetrachloroethylene)
log Pow=3.4 (ICSC, 2013); BCF=77.1 (Check & Review, Japan)
(1,2-Butylene oxide)
log Kow=0.86 (PHYSPROP DB, 2018)

Mobility in soil
Mobility in soil data is not available.

Other adverse effects
Ozone depleting chemical data is not available.

Section 13. Disposal considerations

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging

Waste treatment methods
Avoid release to the environment.
Dispose of contents/container as industrial waste. Accordance with local/national regulation.

Section 14. Transport Information

UN Number or ID Number : 1897
UN Proper Shipping Name :
TETRACHLOROETHYLENE
Class or division (Transport hazard class) : 6.1
Packing group : III
ERG GUIDE No.: 160

IMDG Code (International Maritime Dangerous Goods Regulations)
UN Number or ID Number : 1897
UN Proper Shipping Name :
TETRACHLOROETHYLENE
Class or division (Transport hazard class) : 6.1
Packing group : III

IATA (Dangerous Goods Regulations)
UN Number or ID Number : 1897

UN Proper Shipping Name :
TETRACHLOROETHYLENE
Class or division (Transport hazard class) : 6.1
Hazard labels : Toxic
Packing group : III

Environmental hazards
Marine pollutants (yes/no) : yes

Section 15. Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

U.S. Toxic Substances Control Act (TSCA) Inventory

Chemicals listed in TSCA Inventory

1,2-Butylene oxide; 1,1,2,2-Tetrachloroethylene

Other regulatory information

Ensure this material in compliance with federal requirements and ensure conformity to local regulations.

Section 16. Other information

References and sources for data

Globally Harmonized System of classification and labelling of chemicals, UN
Recommendations on the TRANSPORT OF DANGEROUS GOODS 22nd edit., 2021 UN
IMDG Code, 2022 Edition (Incorporating Amendment 41-22)
IATA Dangerous Goods Regulations (65th Edition) 2024
2020 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
2024 TLVs and BEIs. (ACGIH)
JIS Z 7252 : 2019
JIS Z 7253 : 2019
2023 Recommendation on TLVs (JSOH)
Supplier's data/information

General Disclaimer

All chemicals have unknown hazard. Handle the product with care.
This data sheet was created based on the information we currently have and may be revised according to new information. In addition, the precautions apply only to normal handling, and in the case of special handling, please make adequate countermeasure to maintain your safety.
The data given here is based on current knowledge and experience. The purpose of this Safety Data Sheet is to describe the products in terms of their safety requirements. The data does not signify any warranty with regard to the products' properties.
The GHS classification data given here is based on current Japan official data (NITE published in 2022).